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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/596,057

05/26/2006

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EXAMINER

PATEL, DEVANG R

ART UNIT

PAPER NUMBER

1793

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/596,057	Applicant(s) DULAC ET AL.	
	Examiner DEVANG PATEL	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/26/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. **Regarding claim 4**, it appears that the manganese content in the core alloy [0.35-0.7 wt%] is repeated; the Examiner believes Applicant intended to claim magnesium content rather than manganese since claim 8 clearly recites Mg [0.35-0.7 wt%]. For the purpose of examination, the Examiner reads the claim to imply **Mg**, NOT Mn. Clarification is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 1-13 and 18** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. **Regarding claims 1-13 and 18**, the core alloy with composition having "*other elements <0.05 each and 0.15 total*" is indefinite because it is ambiguous what the Applicant means by "other elements". However, in accordance with broadest reasonable interpretation, it is the Examiner's position that other elements (regardless of what they are) being =0 (i.e. NO other elements) meets the limitation of *other elements <0.05 each and 0.15 total*.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 1-6, 8-11, 14, and 16-18** are rejected under 35 U.S.C. 102(b) as being anticipated by Dockus et al. (US 20030155409).

b. **Regarding claim 1, Dockus et al. (“Dockus”)** discloses a process for assembly of aluminum alloy plates comprising fluxless brazing under controlled nitrogen atmosphere at a temperature less than 600°C [paragraphs 66, 226], rapid cooling [paragraph 228]. Dockus discloses the aluminum alloy plate composed of a core alloy with composition (% by weight) [paragraphs 91-93]:

- i. Si 0.3-1.0; Fe <1.0 ; Cu 0.3-1.0; Mn 0.3-2.0 [inherent in AA 3003];
- ii. Mg 0.3-3.0; Zn<6.0; Ti<0.1; Zr<0.3; Cr<0.3; Ni<2.0; Co<2.0; Bi<0.5; Y<0.5 (i.e. 0), remainder aluminum [paragraphs 91-93];
- iii. coated on at least one face with an aluminum brazing alloy containing 4% to 15% of silicon and 0.01% to 0.5% of at least one of the elements Bi, Li, Pb, or Sb [paragraphs 98,103].

c. **As to claim 2**, Dockus discloses copper content of the core alloy is between 0.35% and 1% [AA 3003 alloy].

- d. **As to claim 3**, Dockus discloses the manganese content of the core alloy is between 0.3% and 0.7% [paragraph 92].
- e. **As to claim 4**, Dockus discloses Mg content of the core alloy is between 0.35% and 0.7% [paragraph 92].
- f. **As to claim 5**, Dockus discloses zinc content of the core alloy is less than 0.2% [paragraph 92].
- g. **As to claim 6**, Dockus discloses bismuth content of the core alloy is between 0.05% and 0.5%.
- h. **As to claim 8**, Dockus discloses the core alloy composition (% by weight) [paragraphs 91-93]:
 - iv. Si 0.3-1.0; Fe <0.5; Cu 0.3-1.0; Mn 0.3-2.0 [AA 3003];
 - v. Mg 0.35-0.7; Zn<0.2; Ti<0.1; Zr<0.3; Cr<0.3; Ni<1.0; Co<1.0; Bi<0.5; Y<0.5 (i.e. 0), remainder aluminum;
- i. **As to claim 9**, Dockus discloses cladding layer onto the core alloy by co-rolling [paragraph 97].
- j. **As to claim 10**, Dockus discloses the brazing alloy coating composed of particles [paragraph 364].
- k. **As to claim 11**, Dockus discloses using the process for manufacturing of heat exchangers [paragraph 3]. Aging is capable of being carried out in hot parts during operation of the exchanger.

- l. **Regarding claim 14, Dockus et al. (“Dockus”)** discloses a process for brazing aluminum alloy plates comprising
- vi. coating one or more plates with a cladding alloy containing 4% to 15% of silicon and 0.01% to 0.5% of at least one of the elements Bi, Li, Pb, or Sb [paragraphs 98, 103];
 - vii. fluxless brazing under controlled atmosphere at a temperature of about 600°C [paragraph 66];
 - viii. rapid cooling [paragraph 228], wherein at least one alloy plate is composed of a core alloy with composition (% by weight) [paragraphs 91-93]: Si 0.3-1.0; Cu 0.3-1.0; Mn 0.3-2.0 [inherent in AA 3003]; Mg 0.3-3.0; [paragraph 91].
- m. **As to claim 16,** Dockus discloses the core alloy including 0.1 wt% Bi [paragraph 98].
- n. **As to claim 17,** Dockus discloses the core alloy comprising 0.5 wt% Mg [paragraph 91].
- o. **As to claim 18,** Dockus discloses the core alloy comprising (by wt%):
- ix. Si 0.3-1.0; Fe <0.5; Cu 0.3-1.0; Mn 0.3-2.0 [AA 3003];
 - x. Mg 0.35-0.7; Zn<0.2; Ti<0.1; Zr<0.3; Cr<0.3; Ni<1.0; Co<1.0; Bi<0.5; Y<0.5 (i.e. 0), remainder aluminum [paragraphs 91-93];

Claim Rejections - 35 USC § 103

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7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Dockus et al. (US 20030155409) as applied to claim 1 above, and in view of Bye et al. (US 4929511).

p. **Regarding claim 7**, Dockus does not disclose the yttrium content of the core alloy between 0.01% and 0.5%. However, having the claimed yttrium content is well known in aluminum-based brazing alloys. **Bye et al.** is drawn to a method of making aluminum based brazing foils in fluxless brazing processes [col. 2, lines 30-33]. Bye discloses that the alloy composition includes 0-0.2 wt% of at least one element selected from bismuth, strontium, lithium, yttrium, calcium, and 0-2 wt% of at least one rare earth metals [col. 2, lines 33-42]. It would have been obvious to a person of ordinary skill in the art at the time of the invention to include 0.1 wt% of yttrium of Bye in the core alloy of Dockus because such would influence the filler metal flow, refine the microstructure of the brazed joint, thereby improving the mechanical properties of the joint [Bye- col. 2, lines 45-50].

11. **Claims 12 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Dockus et al. (US 20030155409) as applied to claims 1 and 14 above, respectively, and in view of Miller (US 5863669).

q. **Regarding claims 12 and 15**, Dockus discloses aging after rapid cooling by a heat treatment [paragraph 228] but is silent about the temperature. However, including the step of aging at a temperature between 80-250°C is well-known in the brazing art. **Miller** is drawn to an Al brazing sheet and discloses method of making the brazing sheet very similar to that of Dockus [col. 3, line 36 – col. 5, line 10]. Miller discloses aging at an elevated temperature in the range of 100°C - 250°C, which results in high post-brazing strength properties [col. 5, lines

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26-48]. It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the aging step of Miller in the process of Dockus in order to obtain high post-brazing strength properties [col. 5, lines 26-48].

12. **Claim 13** is rejected under 35 U.S.C. 103(a) as being unpatentable over Dockus et al. (US 20030155409) as applied to claim 10 above, and in view of Teshima et al. (US 6234377).

r. **Regarding claim 13**, Dockus does not disclose the brazing alloy coating containing a polymer resin. However, **Teshima et al.** (drawn to brazing composition and method of brazing Al material) discloses coating brazing alloy particles by a suitable polymer resin [col. 6, line 65- col.7, line 19]. Teshima discloses that the addition of such a resin improves properties such as the uniformity of the surface and adhesion of the coating. It would have been obvious to a person of ordinary skill in the art at the time of the invention to incorporate the polymer resin of Teshima in brazing alloy coating of Dockus in order to improve properties such as the uniformity of the coated surface and adhesion of the coating [col. 3 line 63-col.4, line 4].

Information Disclosure Statement

13. The information disclosure statement (IDS) submitted on 5/26/06 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

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Conclusion

Claims 1-18 are rejected.

The rejections above rely on the references for all the teachings expressed in the text of the references and/or one of ordinary skill in the art would have reasonably understood from the texts. Only specific portions of the texts have been pointed out to emphasize certain aspects of the prior art, however, each reference as a whole should be reviewed in responding to the rejection, since other sections of the same reference and/or various combinations of the cited references may be relied on in future rejections in view of amendments.

Applicant is reminded to specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. 1.121; 37 C.F.R. Part 41.37; and MPEP 714.02.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEVANG PATEL whose telephone number is (571)270-3636. The examiner can normally be reached on Monday thru Thursday, 8:00 am to 5:30 pm, EST..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on 571-272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. P./

Examiner, Art Unit 1793

/Jessica L. Ward/

Supervisory Patent Examiner, Art Unit 1793